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ABSTRACT

The Dale Avenue Early Childhood Education Center, opened in September 1969 and funded under Title III of the 1965 Elementary Secondary Education Act, features a program set up for kindergarten through third grade but basically ungraded. Each child is allowed to move at his own pace within the range of his own abilities. Furthermore, the child's social, physical, cultural, and emotional development as well as his academic knowledge is fostered. A pre- and post-test experimental and control design using standardized and locally developed instruments was used to evaluate the academic performance of the students in the study. Eight groups of subjects were compared: Dale Avenue experimental--kindergarten and first level; experimental performance objective record groups--kindergarten and first level; disadvantaged control groups--kindergarten and first grade; and advantaged control groups--kindergarten and first grade. Two tester-supplementary teachers and the Dale Avenue psychometrician administered each group the following tests: Peabody Picture Vocabulary Test, Skill Assessment Test, and Identity and Body Parts Checklist. In-service teacher training was instituted on two levels: formal workshops held by experts in education and informal meetings held with the teachers using the performance objective curriculum. [Reproduced from the best available copy.] (Author/JM)

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Title III Project Annual Report 1971-72

Dale Avenue Early Childhood Education Project
Paterson Board of Education
Paterson, New Jersey

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Research Bulletin Volume II No. 4
1971-72

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Mrs. Helen Hanson . . . . . Project Director, Title III, DAECEC*

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*Dale Avenue Early Childhood Education Center

Definitions

Disadvantaged The most striking feature of the inner city culturally disadvantaged is that they are poor. Their yearly incomes are generally around $5000. Many come from broken homes and live in densely populated areas in substandard housing. These children live in a world that is dominantly physical rather than ideationally and verbally controlled. They lack early experiences of an educationally stimulating nature. Children from culturally disadvantaged homes often do poorly in school for the following reasons:

1. The lack of an educational tradition in the home.
2. The lack of books, toys and games in the home.
3. Insufficient standard English language.
4. Inadequate motivation to pursue a long range educational career.
5. Inadequate self image.
6. Poor health, improper diet, frequent moving and noise.

Advantaged Most of the culturally advantaged children come from so called middle-class homes where the average yearly incomes are generally over $8,000. They live in less populated areas than the disadvantaged and there are less people per apartment or house. Generally in these homes communication is carefully nurtured. Children are encouraged to speak in words, phrases and complete sentences. They usually have a repertoire of nursery rhymes, poems, stories and songs which have been taught by rote. There are many books, toys and games in their homes. Their curiosity is cultivated and questions are answered by parents. They learn to talk freely with parents, siblings, other children, relatives, neighbors, shopkeepers and friends of parents.

I Background

A. Performance Objectives

When the Dale Avenue Early Childhood Education Center opened in September, 1969, Dr. Michael Gioia, Superintendent of Schools announced that this center would be set up for kindergarten through third grade, but would be basically ungraded. Each child would be allowed to move at his own pace within the range of his own abilities. Furthermore, the child's social, physical, cultural and emotional development as well as his academic knowledge would be fostered.

Prior to the opening of Dale Avenue School, Mr. Reginald Brown, Social Work Coordinator for Title I, contacted Mr. Robert J. Cleary, Director of Field Services of Educational Testing Service of Princeton, New Jersey to seek assistance in creating and formulating an evaluation program which would assess the development of the individual pre-kindergarten and kindergarten child. Mr. Cleary suggested that performance objectives be used to determine cognitive abilities. In December of 1969, three months after Dale Avenue School opened, Mr. Cleary met with Mr. Brown, Miss Harriet Gibbs, Director of Pre-Kindergarten and Mrs. Helen Hanson, Assistant Director of Pre-Kindergarten. At this time, they discussed the headings under which the performance objectives would be listed.

The assessment of the needs of urban disadvantaged pre-school children had been partly made the previous year at the Paterson State College Demonstration School where a group of thirty pre-schoolers were enrolled in an experimental program. Further assessment was made during the 1969-70 school year at Dale Avenue.

At the December, 1969 meeting, the categories of "Listening", "Naming", "Observing", "Encoding", "Math", and "Classification", were chosen. In January, 1969, the categories of Writing and Motor Skills, Perceptual Motor Skills and Speaking were added.

The results of the Peabody Test and speech and language evaluations given in 1969-70 substantiated the belief that the need to develop spontaneous standard English was a top priority in the pre-kindergarten curriculum.

In the Spring of 1970, it became apparent that additional personnel would be needed to assist the professionals of the Dale Avenue School and the community served by it if the social,

physical, emotional and cognitive development of each child was to be fostered. Consequently, a Title III proposal for a program to produce a more effective curriculum, pre-kindergarten through third level, was written by Mrs. Vera P. Thompson, Director of Funded Programs, and a writing team including Mr. Eugene Mason of the State Department of Education, Mr. Joseph Heitzman, Assistant Director of Funded Programs and the following Dale Avenue School personnel: Mr. Peter J. Wild, Principal; Miss Harriet Gibbs, Director of Pre-Kindergarten; Mrs. Helen B. Hanson, Assistant Director of Pre-Kindergarten; Mr. Reginald T.Brown, Social Work Coordinator; Mrs. Marie O'Mara, Psychologist; and Mrs. Rita Gavzy, Speech Therapist.

The Title III Dale Avenue Urban Early Childhood Education Project was the outcome of this proposal. It became the duty of the Title III staff members who were hired in October, 1970 to complete and refine the performance objectives that had been compiled the previous year; to train staff in implementing these objectives; to pre and post test the pre-kindergarten and kindergarten population at Dale Avenue and experimental control groups; and to assess the value of the program.

B. First Year Results

The 1970-71 test data indicated that the Dale Avenue Pre-Kindergarten and Kindergarten children showed significant gains on project testing far exceeding that of the Disadvantaged Control groups. (For detailed information, see Research Bulletin, Volume I, Number 4).

The pre-kindergarten and kindergarten program at Dale Avenue was considered to be extremely successful by the Title III team, Dale Avenue teachers and parents, the Director of Funded Programs, the local Superintendent and Board of Education and the State Superintendent of Education. The feeling of the teachers and parents was documented by evaluation rating forms completed by them. Local school officials showed their belief in the project by a directive to all Title I schools in the Paterson District to implement the Dale Avenue Pre-K, K performance objectives in one kindergarten class in each school. They showed further support by voting for the continuation of the project for its second year.

The State Commissioner of Education, Dr. Carl Marburger, sent to educators throughout the state a technical brief on the Dale Avenue Project. This brief states that Dale Avenue was one of several projects that had been evaluated as substantially meeting the objective of finding solutions to educational problems for urban children.

II Method

A. Subjects

1. Dale Avenue Experimental - Kindergarten

Thirty children were randomly selected from the one hundred sixteen kindergarten children at Dale Avenue School. The children were in six classes ranging in size from sixteen to twenty-two. Fifty-four percent are boys and forty-six percent are girls. Forty-six percent are Black, twenty-three percent are Spanish, eighteen percent are White and one percent are Oriental. The random sampling of children did not differ significantly from the make up of the entire class.

2. Experimental Performance Objective Record Group (Exp. P.O.R.) - Kindergarten

Twenty-nine children who constituted a kindergarten class in a Title I school in Paterson made up this group. Unlike Dale Avenue children, they had not had a full year of pre-kindergarten. The teacher of this group utilized the Dale Avenue Pre-Kindergarten - Kindergarten Performance Objective Curriculum. The teacher had also used this curriculum the previous year. There also was a full time aide in the classroom. These children were housed in a mobile classroom with an environment similar to that of Dale Avenue. The teacher received feedback information on the testing and was invited to workshops at the Dale Avenue School.

3. Disadvantaged Control Group - Kindergarten

Twenty-nine children comprised the Kindergarten Disadvantaged Control Group. The class used was selected from a Title I school in Paterson and the children came from home backgrounds similar to those of the Dale Avenue children. The curriculum was traditional rather than performance objectives. The teacher received no feedback from the testing nor did she attend Dale Avenue teacher training workshops. There was an aide in the classroom.

4. Advantaged Control Groups - Kindergarten

This group was comprised of thirty-two children from a kindergarten in an affluent community outside of Paterson where the curriculum was other than performance objectives. As with the other groups, these children attended half-day sessions. Unlike the other kindergarten groups, there was no full time aide in the classroom.

5. Dale Avenue Experimental - First Level

Thirty children were selected at random from the one hundred and fourteen first level children at Dale Avenue School. In the first level, two teachers share an aide for approximately fifteen hours a week. Fifty percent of the total first level children are boys. Sixty percent are Black, twenty percent are Spanish, nineteen percent are White and one percent are Chinese. The sample was representative of the total class.

6. Experimental Performance Objective Record Group First Grade (Exp. P.O.R.)

Twenty-five first grade pupils who had previously used the objective curriculum made up this group. This group continued to use the Performance Objective Record. They were housed in a Title I school in the Paterson school district. They had materials and conditions as similar to Dale Avenue as possible. The teacher had a full time aide. The teacher also took part in all teacher training sessions at the Dale Avenue School and the students attended full day classes.

7. Disadvantaged Control Group - First Grade

Twenty-five first grade children who had no pre-school experience or performance objective curriculum in kindergarten constituted the first grade Disadvantaged Control Group. The group was housed in a Title I school. The teacher had an aide and taught the traditional first grade curriculum.

8. Advantaged Control Group - First Grade

The first grade Advantaged Control group was made up of two parts. One group of twelve pupils who had previously been in the Kindergarten Advantaged Control group were from a non-Title I school in Paterson. This group is designated Advantaged #1. The other group of fourteen pupils came from an affluent community suburban to Paterson. This group is hereafter designated as Advantaged #2. Neither of these groups had an aide nor did they use the objective curriculum.

B. Personnel

Two tester-supplementary teachers and the Dale Avenue Psychometrician did the testing. One tester had an M.A. in communication disorders. The other had a B.A. Both were certified teachers. The psychometrician had a B.A. in psychology with honors in statistics and an M.A. in clinical psychology. Everything possible was done to insure the validity and objectivity of the testing.

C. Testing Program

1. The Peabody Picture Vocabulary Test (PPVT)

The PPVT is an individually administered test of verbal intelligence. It requires no verbal response from the testee and no special training for the tester. It is a good rapport builder and requires approximately fifteen minutes to administer. The test consists of one hundred and fifty plates, each containing four pictures, graduated in terms of item difficulty. The tester presents a stimulus word orally and the subject indicates, usually by pointing, which picture of the four on the particular plate, represents what the tester has said. The Basal Age is established by eight correct responses and the test is continued to a Ceiling Age of six errors in eight consecutive responses. The test yields a raw score, that is, a number of correct responses, and three types of derived scores, mental age, intelligence quotient, (IQ) and percentile. The test publisher also presents two alternate forms, A and B, which allows for a pre and post testing design.

2. Skill Assessment Test (I and II)

The pre-kindergarten Skill Assessment Test I inventories some of the skills which are included on the Performance Objective Record and on the Stanford - Binet Intelligence Scale. Ability to name, circle, square, triangle; to name colors; to rote count; to identify randomly presented numberals; to count objects and to see likes and differences are quickly assessed by this staff-made test. In contrast to the PPVT, the child must verbalize a response.

The Kindergarten Skills Assessment Test II is an extension of Test I. It contains more items than the latter test and some of the items range above expected developmental performance of kindergarten children to allow for finer discrimination at these higher performance levels.

3. Identity and Body Parts Checklist (IDP) I and II

The staff-made IBP was developed because the Title III staff considered knowledge of the self as being essential before a child can sharpen his intelligence. It was also felt that learning all about who they are and the labels for the parts of their body would help children to have an understanding of their uniqueness and worth. It would also help to increase their standard English and provide rudimentary likenesses and differences. The logical place to start would certainly seem to be with the children themselves.

D. Procedure

1. Pre and Post Test Design

A pre and post test experimental and control design using standardized and locally developed instruments was used to evaluate the academic performance of the students in the study. The kindergarten and first grade groups were tested early in the school year and post-tested as close to the end of the school year as possible.

At each testing, the different groups, experimental and control, were compared in terms of their performance on the measures used. The PPVT, S/A, and IBP for the kindergarten groups and the PPVT for the first grade groups. Additionally gains were evaluated between pre and post testing for each group to determine growth.

2. Test Feedback

Feedback information was given to the teachers of the experimental groups on the S/A, IBP, Stanford Early School or Primary Achievement Tests and Bank Street Reading Tests. Missed items were listed and the teachers were encouraged to give instruction to individual children in the areas where they exhibited weaknesses.

3. Performance Objectives

The Primary Performance Objective Record, the curriculum, is a continuation of the Pre-Primary Objectives. They are compatible with the developmental sequence of six and seven year olds who previously had used the Pre-primary Performance Objectives.

For first through third levels, the Language Arts area is broken down into; Listening, Naming, Encoding/Decoding and Speaking. Science is broken down into; Observing, Classification and Seriation. Math is also included as a separate area.

The individual record of performance goes along with each child to his next class. The next teacher is then able to ascertain what he can do and to help him move along successfully at his own ability level. The rationale for the inclusion of the aforementioned skill areas can be found in a previous bulletin (Research Bulletin Volume II Number 3.)

4. Teacher Training

In-service training was instituted on two levels: formal workshops held by experts in education and informal meetings held with the teachers using the performance objectives. Formal workshops were, Dr. Harold Scholl, "Learning Disabilities Pheonomenon," Mrs. Anne Oppman, "Reading and Learning Disabilities," and Dr. Daniel Sugarman, "Interrelationships in Urban Schools."

Informal workshops consisted of orientation and discussion meetings where teachers had the opportunity to contribute their input into the program and to ask questions concerning the implementation of the performance objective curriculum.

5. Materials and Resources

Sample materials were ordered by the Title III staff and presented to the teachers upon request for use in working with children with particular language and learning difficulties. Many of these supplies were manipulative such as; parquetry blocks, counters, peg boards, puzzles, toy money, playing cards, crossword puzzles, etc. Peabody language development kits were also distributed to the teachers.

The Title III resource library was well used by the Dale Avenue staff. The Inner City Child, Language Programs for the Disadvantaged, Behavior Modification and Perceptual Activities are just some of books that were utilized by the Dale Avenue teachers in planning activities for their children.

6. Supplementary Teaching and Volunteer Services

The two supplementary teacher-testers began a supplementary teaching program as soon as the pre-testing was completed. Children who needed help in specific areas such as; psychological, speech or language, perception, audition and cognitive, received it. Either through individualized supplementary instruction, specialized classroom instruction or some other specific therapy.

The parent involvement program contributed greatly to parent understanding and support of the program. Nine parents received intensive training in tutoring methods utilized with perceptually handicapped children and children exhibiting poor listening or language skills. Parents contributed a total of four hundred and forty volunteer hours during the year.

Students from William Paterson College volunteered one hundred and ninety hours in the audiology and speech therapy programs.

7. Reading Program

A combination of teacher evaluation and testing information was used to place each, first through third level, child at Dale Avenue into a homogeneous reading group. These groups were led by a specialist, teacher or teacher aide for forty-five minutes a day. Children with special needs were placed in reading programs which relied upon the skills of the school specialists in physical education, music, art, home economics and psychology.

Children who exhibited perceptual motor problems were placed with the physical education teacher who used intensive motor training with these children.

The art specialist worked with children with problems in visual perception. She utilized basic shapes to form more complicated structures. Cave drawings, signs and newspaper advertisements were part of this program.

The Title III psychometrician who has had graduate training in clinical psychology and served as behavior modification consultant at the Kansas Neurological Institute used behavior modification techniques with a group of disruptive children.

A few level three children who were reading on an extremely depressed level were placed with the home economics teacher for reading. The teacher used items found in the home economics setting as a medium for the establishment of word recognition and sight vocabulary. Classification of foods and objects followed, and these children are now reading simple recipes.

Children who manifested special aptitude for music were in a music and reading group with the music specialist. Word families were built in spelling songs. Word recognition was taught as children learned to read the words in songs.

As can be seen the special talents of the Dale Avenue staff personnel were utilized in novel ways in an attempt to deal with the reading difficulties of some of the children.

8. Experimental Mini Groups

Relying on teacher evaluation seven learning disabled pupils were taken out of two third level classrooms and placed in a six week "mini-class" led by the Project Director and Research Director, teacher aides, and supplementary teachers. Although it was a very time consuming program for the Title III staff, the individual needs of these children were quickly diagnosed and plans for remediation were made and implemented. At the end of the six week period, five of the children were placed in various second level classes, one was referred to special services and one returned to a third level classroom. All who returned to classes received additional supplementary instruction and an individualized teaching prescription was given to the teacher.

9. Random Sampling

Although all of the pre-kindergarten children were tested at registration time and all the kindergarten and first level children during the first month of school a random sample of thirty children per level was used for the research. This was done in the interest of time, money and efficiency. This also allowed the groups to be relatively the same size for statistical comparisons.

At each level, the names of the students were put in a box. The names were then taken out at random until the sample was completed. After a name was drawn, it was replaced in the box so that each child had an equal probability of being included in the sample. If the same name was drawn a second time it was returned and another selection was made until the thirty children had been chosen.

10. Pre-Kindergarten Monitoring

Since the Title III staff had pre-tested all of the pre-kindergarten children and provided feedback to the teachers, the post-testing of the random sampling of thirty pupils served as a monitoring of their program. It indicated whether the remediation prescriptions provided for these children had been acted upon.

11. Audiology Program

Five hundred and fifty children from pre-kindergarten through third level were given hearing screening tests. Twenty percent failed the screening. Subsequently, those who failed were given further audiometric tests. The results indicated that four percent had possible hearing loss.

In January and February, several days were devoted to testing faculty and staff numbers who wished to have their hearing tested. Thirty-nine percent of the forty-seven tested, or nineteen, had possible hearing loss.

12. Speech Program

A total of one hundred and five Dale Avenue pre-kindergarten through level three children received individual or small group therapy from the Dale Avenue speech therapist and eight student therapists from William Paterson College. Articulation, language stimulation, language development and auditory training were some of the areas of remediation.

13. Specialist Program

Music, art, science and physical education specialists provided enrichment programs in their areas to first through third level children. On their planning time, they often worked with pre-kindergarten and kindergarten children. The physical education specialist and the nurse held an exercise period for a group of children before 9:00 A.M. The physical education teacher also worked during planning time with children who had motor difficulties.

XIX Results and Analysis

In the pages that follow the analysis of the data will be found. Below is a glossary of terms for referral.

Glossary

1.	P.P.V.T.	Peabody Picture Vocabulary Test
2.	P.O.R.	Performance Objective Record
3.	N	Number of Students tested
4.	Mean	Average
5.	A.V	Analysis of Variance tests whether there are significant differences among the groups.
8.	A posteriori	Follow-up of the A.V to determine between which groups differences exist.
9.	t-statistic	Comparison of gains made to determine if the gains are significant.
10.	f	Ratio of group variances
11.	df	Degrees of freedom
12.	α	Alpha level - level of probability

III Results

The results of the research procedure are presented below. The data will be presented in the following manner. First, the analysis of the Peabody Picture Vocabulary Test (PPVT), both kindergarten and first level. Then the analysis of the Skills Assessment (S/A) and the Identity and Body Parts Checklist (IBP) data for kindergarten. Following this will be a procedure to validate the use of the PPVT as an assessment of I.Q. of the population in the study. Then the results of the monitoring of the pre-kindergarten program are presented. Finally, an evaluation of the progress of the second and third level children at the Dale Avenue School.

PPVT - Kindergarten

The mean and number of subjects for each group on the PPVT kindergarten pre-test are presented in Table I.

Table I - Mean I.Q. and number of subjects - PPVT - Kindergarten, pre-test

Group	N	Mean
Advantaged	32	105.41
Dale Avenue	30	88.46
Exp. P.O.R.	29	78.65
Disadvantaged	29	76.67

A one way analysis of variance (AoV) was applied to determine if any differences among the groups was significant. The results of the AoV are found in Table II.

Table II AoV - PPVT - kindergarten - pre-test

Source	of	Sum of Squares	Mean Square	F
Between	3	15981.93	5327.31	16.81*
Within	116	36746.56	316.78	
Total	119	52728.50		

*F = 3.98
α.01 (3,100)

The obtained F value of 16.81 is significant beyond the expected value of 3.98 at the .01 level of probability.

Analysis was then made comparing the differences between means using the Scheffe method. The comparison of the Advantaged and the Dale Avenue groups yields an F value of 14.05 exceeding the critical value of 6.90 at the .01 level of probability. This indicates that thest two groups differ significantly in terms of I.Q. as measured by the PPVT. Comparing Dale Avenue and the Experimental P.O.R. group and F value of 4.48 is obatined. This exceeds the critical value of 3.94. Thus, the Dale Avenue group scores significantly higher than either the Experimental P.O.R. or the Disadvantaged groups but, Dale Avenue children score significantly below the Advantaged group on this testing.

At post-test time the same procedure was followed. The mean I.Q. and number of subjects are presented in Table II.

Table III Mean I.Q. and number of subjects - PPVT Kindergarten post-test

Group	Mean	N
Advantaged	113.60	30
Dale Ave.	96.27	29
Exp. P.O.R.	82.60	26
Disadvantaged	82.07	27

The analysis of variance yields a highly significant F value of 24.16 well beyond the critical value of 3.98 at the .01 level of probability. The AoV table is presented as Table IV.

Table IV - AoV - PPVT Kindergarten post-test

Source	df	Sum of Squares	Mean Square	F
Between	3	18950.64	6316.88	24.16
Within	108	28228.46	261.37	
Total	111	47179.10		

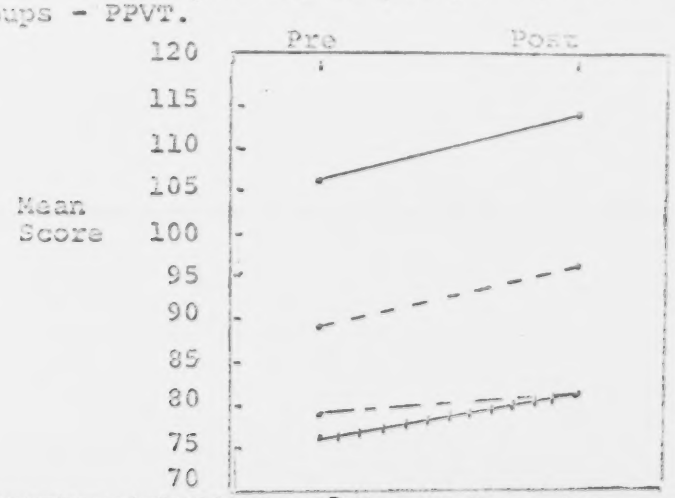
$F = 3.98$

$< .01 \ (3,100)$

Post-mortem analysis reveals much the same as was found in the pre-test. That is, the difference between the Advantaged and the Dale Avenue groups is significant (F=16.94). While the Dale Avenue youngsters score significantly higher than either the Experimental P.O.R. group (F=9.80) or the Disadvantaged group.

The results of the pre and post testing is presented graphically in Figure 1.

Figure 1. Comparison of pre-post performance of kindergarten groups - PPVT.



As can be seen in Figure 1, all groups maintained their same relative position from pre to post-testing.

The actual gains in I.Q. made by each group and the corresponding t value are presented in Table V.

Table V I.Q. gains PPVT kindergarten and t statistic

Group	Gain	t-statistic
Advantaged	8.60	.68
Dale Avenue	7.00	1.27
Exp. P.O.R.	4.10	.22
Disadvantaged	5.30	.40

The t-statistic for correlated samples was computed to determine if any of the gains made are significant. None of the obtained t-values exceeded the critical value of t=2.045.

PPVT - 1st Level

A one way analysis of variance was applied to the data generated by the pre-test scores derived from the PPVT as administered to the first level youngsters. This manipulation yields an F value of 19.64 which exceeds the critical value, indicating that there are significant differences among the five groups in this part of the study. The AoV data is presented in Table VI.

Table VI AoV - PPVT - 1st Level pre-test

Source	df	Sum of Squares	Mean Square	F
Between	4	21066.97	5266.74	19.64*
Within	103	27607.57	268.03	
Total	107	48674.54		

*F=3.51
α.01 (4,100)

A posteriori analysis using the Scheffe method was then applied in order to ascertain where the indicated differences were. The mean I.Q. scores and number of subjects in each group are presented in Table VII.

Table VII Mean I.Q. scores and number of subjects in each group PPVT, 1st Level pre-test

Group	Mean	N
Advantaged #2	113.14	14
Advantaged #1	105.25	12
Dale Ave.	100.50	30
Exp. P.O.R.	87.40	25
Disadvantaged	72.61	25

The results of the post-mortem analysis indicates that the Experimental P.O.R. group scores significantly higher than the Disadvantaged Control group (F=10.21). There also exists a significant difference between the Dale Avenue youngsters and the Experimental P.O.R. children (F=8.73). There is no significant difference between the Dale Avenue and the Advantaged #1 groups (F=.72) or the Dale Avenue and the Advantaged #2 groups (F=5.68). There is also no significant difference between the scores of the two advantaged groups (F=1.50). All these comparisons were made at the .01 level of probability with a critical value of 6.90.

A one-way analysis of variance was applied to the post-test scores of the different groups. The resulting F value of 15.38 is significant beyond the .01 level of probability. The AoV data is presented in Table VIII.

Table VIII - AoV - PPVT; 1st Level post-test

Source	df	Sum of Squares	Mean Square	F
Between	4	15733.07	3933.26	15.38*
Within	101	25821.84	255.66	
Total	105	41554.91		

*F=3.51
$\prec$.01 (4,100)

A posteriori comparisons were then made to ascertain between which means significant differences exist. The mean I.Q. scores and number of students in each group are presented in Table IX.

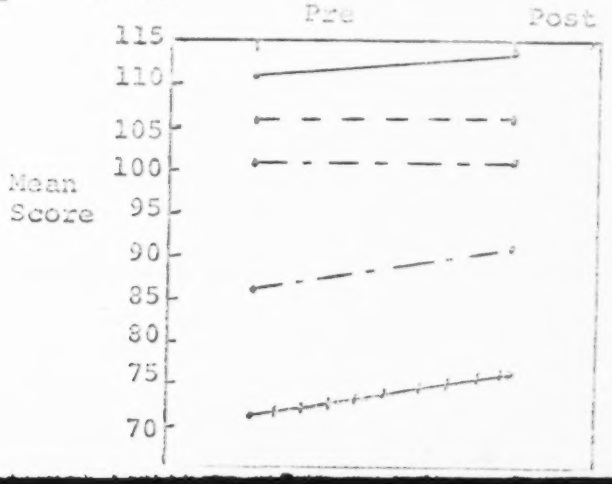
Table IX - Mean I.Q. scores and number of subjects in each group PPVT, 1st level post-test

Group	Mean	N
Advantaged #2	114.4	14
Advantaged #1	104.8	12
Dale Ave.	100.1	30
Exp. P.O.R.	91.3	25
Disadvantaged	76.9	25

The results of the post-mortem analysis reveals that the Experimental P.O.R. group scores significantly higher in derived I.Q. than the Disadvantaged group ($F=10.13$). The Dale Avenue group does not score significantly different from the Experimental P.O.R. group ($F=4.13$). There is no significant difference between the Dale Avenue youngsters and the Advantaged #1 group ($F=.74$) or the Advantaged #1 and Advantaged #2 groups ($F=2.32$). There is a significant difference at post-test time between the Advantaged #2 group and the Dale Avenue group ($F=7.63$). All comparisons were made at the .01 level of probability with a critical value of 6.90. It should be noted that the obtained F value of 4.13 for the comparison of Dale Avenue and the Experimental P.O.R. group is significant beyond the .05 level. However, the .01 level was decided upon a priori and ethical considerations prohibit reading significance in the difference between these groups.

The data representing the pre and post scores of first level youngsters is presented graphically in Figure 2.

Figure 2. Comparison of pre-post performance of 1st level groups - PPVT.



Gains made by each group were subjected to analysis to determine if any gains were significant. The t-statistic for correlated samples was applied and none of the individual group gains reach the level of significance. The results of these computations are presented in Table X.

Table X - I.Q. gains between pre-post testing PPVT,1st level and t-value

Group	I.Q. Gain	t-value
Advantaged #2	1.28	.10
Advantaged #1	- .42	- .04
Dale Avenue	- .44	- .03
Exp. P.O.R.	3.90	.39
Disadvantaged	4.37	.30

In addition to the PPVT, the staff made Skills Assessment Test (S/A) and the Identity and Body Parts Checklist (IBP) were administered to the kindergarten children in the study. The data generated by these tests was subjected to statistical analysis.

Skills Assessment (S/A) Kindergarten

A one-way analysis of variance was applied to the pre-test data to see if there were any significant differences among the groups. An F-value of 13.39 was obtained which exceeds the critical value of 3.98 at the .01 level of probability. The analysis of variance is presented in Table XI.

Table XI AoV - S/A kindergarten pre-test

Source	df	Sum of Squares	Mean Square	F
Between	3	6888.35	2296.11	13.39*
Within	116	19879.78	171.37	
Total	119	26768.13		

*F=3.98
α.01 (3,100)

A posteriori analysis was then made to determine where the differences reached significance. The results indicate that the Advantaged group scores significantly higher on the S/A than does the Dale Avenue group (F-6.57). The Dale Avenue youngsters do not score significantly better than the Experimental P.O.R. group (F-342). The Dale Avenuers do score significantly higher than the Disadvantaged controls (F=11.04) whereas, the Experimental P.O.R. group does not (F=2.12). The mean S/A scores and number of students in each group are presented in Table XII. The comparisons of mean scores is presented in Table XIII.

Table XII - Mean scores and number of subjects in each group - S/A kindergarten - pre test

Group	Mean	N
Advantaged	74.72	32
Dale Ave.	66.19	30
Exp.P.O.R.	59.88	29
Disadvantaged	54.88	29

Table XIII - Comparison of Mean scores S/A kindergarten pre-test and F ratio

Group	F
Advantaged - Dale Ave.	6.57
Dale Ave. Exp. P.O.R.	3.42
Dale Ave. Disadvantaged	11.02*
Exp. P.O.R. Disadvantaged	2.12

*F = 3.94
α .05 (1,000)

The S/A post test scores of the four kindergarten groups were analyzed using the analysis of variance technique. The obtained F value of 6.90 is significant beyond the .01 level of probability. The analysis is presented in Table XIV.

Table XIV A,V - S/A Kindergarten post-test

Source	df	Sum of Squares	Mean Square	F
Between	3	2673.62	891.20	6.90*
Within	108	13936.15	129.03	
Total	111	16609.77		

*F=3.98
α .01 (3,100)

The Scheffe method was used to determine where the indicated differences might be. The mean scores and number of subjects in each group are presented in Table XV.

Table XV - Mean S/A scores and number of subjects in each group - Kindergarten post test

Group	Mean	N
Advantaged	80.12	30
Dale Ave.	77.53	29
Exp. P.O.R.	74.10	26
Disadvantaged	67.09	27

The results indicate that the Experimental P.O.R. group, the Dale Avenue group and the Advantaged group all score significantly than the Disadvantaged control. None of the differences between the three former groups reach a statistically significant level. The between group comparisons are presented in Table XVI.

Table XVI - Comparison of performance on the S/A, kindergarten post test

Groups Compared	F
Exp. P.O.R. - Disadvantaged	5.07*
Dale Ave. - Exp. P.O.R.	1.22
Advantaged - Dale Ave.	.77
Advantaged Exp. P.O.R.	3.88

*F = 3.94
α .05 (1,100)

Table XV - Mean S/A scores and number of subjects in each group Kindergarten - post test

Group	Mean	N
Advantaged	80.12	30
Dale Ave.	77.53	29
Exp. P.O.R.	74.10	26
Disadvantaged	67.09	27

The results indicate that the Experimental P.O.R. group, the Dale Avenue group and the Advantaged group all score significantly than the Disadvantaged controls. None of the differences between the three former groups reach a statistically significant level. The between group comparisons are presented in Table XVI.

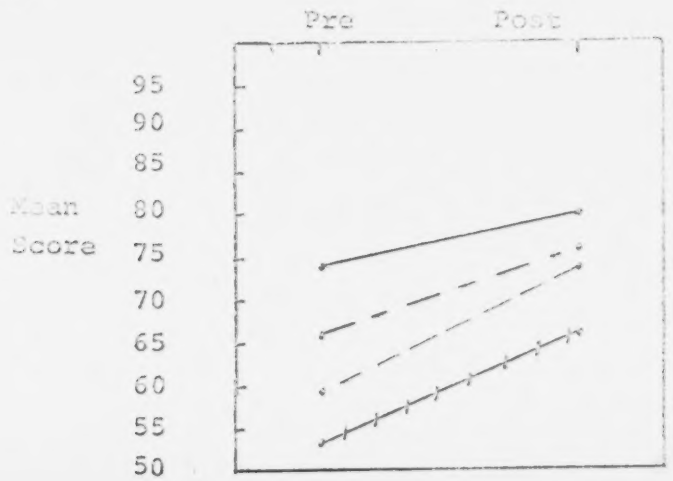
Table XVI - Comparison of performance on the S/A, Kindergarten post test

Group Compared	F
Exp. P.O.R. - Disadvantaged	5.07*
Dale Ave. - Exp. P.O.R.	1.22
Advantaged - Dale Ave.	.77
Advantaged Exp. P.O.R.	3.80

*F=3.94
α<.05 (1,100)

The results of the pre and post testing of the kindergarten groups on the S/A is presented graphically in Figure 3.

Figure 3 - Comparison of pre-post performance of kindergarten groups on S/A.



None of the gains made between pre and post testing by any of the groups reached a statistically significant level.

Identity and Body Parts Checklist (IBP) Kindergarten

The same analysis as above was applied to the data generated by the Identity and Body Parts Checklist (IBP). The analysis of variance of the IBP pre test yielded an F value of 12.59 which indicates that there is a significant difference among the performances of the kindergarten groups on this particular measure. The AoV data is presented in Table XVII.

Table XVII AoV. IBP kindergarten pre test

Source	df	Sum of Squares	Mean Square	F
Between	3	5324.33	1774.77	12.59*
Within	116	16351.63	140.96	
Total	119	21675.96		

*F = 3.98
α<.01 (3,100)

A posteriori analysis was then made to ascertain where the indicated differences lay. The mean IBP scores and number of students in each group are presented in Table XVIII.

Table XVIII Mean IBP scores and number of subjects in each group - kindergarten pre-test

Group	Mean	N
Advantaged	81.18	32
Dale Ave.	81.03	30
Exp. P.O.R.	69.41	29
Disadvantaged	66.51	29

The application of the Scheffe method shows that there is no significatn difference between the Dale Avenue and Advantaged children (F=0.00). There was no significatn difference between the Experimental P.O.R. group and the Disadvantaged controls. However, both the Dale Avenue and Advantaged groups scored significantly higher on the IBP than either the Experimental P.O.R. or the Disadvantaged control groups.

Analysis of the post-test scores yielded an F value of 5.62 which is significant beyond the .01 level of probability. The data is presented in Table XIX.

Table XIX AoV - IBP kindergarten post-test

Source	df	Sum of Squares	Mean Square	F
Between	3	1416.84	472.28	5.62*
Within	108	9064.07	83.92	
Total	111	10480.91		

*F = 3.94
$\prec$.01 (3,100)

The means of the groups were then compared to determine where the differences were to be found. The mean post-test IBP scores and the number of students in each group are presented in Table XX.

Table XX Mean IBP scores and number of subjects in each group - kindergarten post-test

Group	Mean	N
Advantaged	90.73	30
Dale Ave.	86.91	29
Exp. P.O.R.	84.80	26
Disadvantaged	80.96	27

Using the Scheffe method, no significant difference was found between the Experimental P.O.R. group and the Disadvantaged controls (F=2.33). The difference between the Dale Avenue and Experimental P.O.R. group was not significant (F-.72) and the Advantaged group did not score significantly higher than the Dale Avenue group. (F=2.54). However, the Dale Avenue youngsters scored significantly higher than the Disadvantaged control group. (F=5.89) and the Advantaged group performed significantly higher than did the Experimental P.O.R. group. (F=5.79). These results are presented in Table XXI.

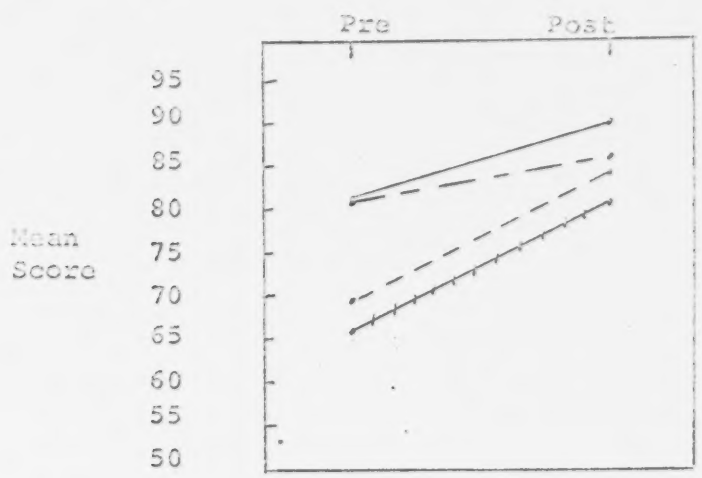
Table XXI - Comparison of performance - IBP Kindergarten post-test

Groups Compared	F
Disadvantaged - Exp. P.O.R.	2.33
Dale Avenue - Exp. P.O.R.	.72
Advantaged - Dale Ave.	2.54
Dale Ave. - Disadvantaged	5.89*
Advantaged - Exp. P.O.R.	5.79*

*F=3.94
α<.05 (1,100)

The performance of the groups on pre and post testing in the IBP is presented graphically in Figure 4.

Figure 4 - Comparison of pre-post performance IBP - kindergarten.



The gains made by each group were tested using the t-statistic for correlated samples. The result indicates that of the four groups in the kindergarten study only the Disadvantaged Control group made significant gains on the IBP (t=2.07).

PPVT - Validation

Some question has been raised about the use of the PPVT as a measure of I.Q. In order to validate the use of this instrument in this study, 30 children were selected at random and were given both the PPVT and the Wechsler Intelligence Scale for Children (WISC). The WISC is a widely used instrument for assessing intellectual functioning. The children averaged 105.20 on the WISC. Full Scale and 97.86 in I.Q. on the Peabody. The correlation was then calculated between these two measures in order to determine the degree to which these scales vary together. Using Pearson's Product Moment Formula, it was found that the PPVT correlates .74 with the WISC Full Scale I.Q. This coefficient is significantly different from zero, and indicates that 55% of the variance of one test canaccount for the variance of the other.

As a result of this testing and analysis, it is felt that the use of the PPVT as an estimate of I.Q. for the children at the Dale Avenue School is valid.

Pre-Kindergarten Monitoring

Part of this year's grant called for the monitoring of the pre-kindergarten program by the Title III research team. In order to evaluate the effectiveness of this part of the program, thirty pre-kindergarten children were selected at random and were administered the PPVT, S/A and IBP at the end of the school year. The scores were then compared to these same children's performance on these tests upon entering the program. The resulting data was then analyzed by the psychometrician to determine if any of the observed gains reached a statistically significant level. The mean and standard deviation for this group at both pre and post test time is presented in Table XXII.

Table XXII Mean scores and standard deviation pre and post testing, PPVT, S/A and IBP, pre-kindergarten

Test	PPVT		S/A		IBP	
	Pre	Post	Pre	Post	Pre	Post
Mean	80.9	103.8	31.1	84.7	55.2	92.2
S.D.	14.9	19.7	19.9	14.7	19.6	10.2
N	30	30	30	30	30	30

The gains made in S/A and IBP are statistically significant beyond the .01 level of probability. The I.Q. gains, although quite substantial, did not reach significance due to the variation within the group.

The mean difference score ($\bar{D}$), standard deviation of the difference ($S_{\bar{D}}$) and t value for the PPVT, S/A and IBP are presented in Table XXIII.

Table XXIII Mean difference ($\bar{D}$), standard deviation of the difference ($S_{\bar{D}}$) and t value PPVT, S/A, and IBP pre-kindergarten

Test	PPVT	S/A	IBP
$\bar{D}$	22.9	53.6	37.0
$S_{\bar{D}}$	17.3	18.5	15.9
t	1.33	2.90*	2.32*

Adjunct Studies

At the request of Mr. Peter Wild, the principal, an assessment was made of the performance level of the children in the second and third level at Dale Avenue School. These children had not been part of the Title III research project and it was felt that an evaluation of their progress would provide a better picture of the total Dale Avenue program.

These children received the same special services and supplementary instruction as the project children but had not been introduced to the performance objective curriculum at the time of testing.

Second Level

A group of 30 children was randomly selected from the five second level classes at Dale Avenue. Each child was

administered the PPVT and comparison was made in terms of gains or losses with these children's scores upon entering the school. These children had been housed at Dale Avenue for an average of 25.33 months and had gained an average of 24.27 months in mental age for an average I.Q. gain of 3.43 points.

Statistical analysis reveals that this gain is not significant, indicating that these children had neither gained nor lost ground during their tenure at Dale Avenue School.

Third Level

The same procedure as above was followed in assessing the progress of the Dale Avenue third levelers.

A random sample of twenty-eight children was selected from among the third level students. They were administered the PPVT and their present scores were compared with their entry scores.

At the time of testing these children had been at Dale Avenue for an average of 27.50 months. During that time, they had gained an average of 21.79 months in mental age with a net loss in I.Q. of .22 points. This difference is not significant as it falls within the normal range of variation.

As with the second level children, these children had not gained in I.Q. while at Dale Avenue but perhaps more importantly they had not lost.

IV Discussion and Summary

The test data indicates that while the Dale Avenue kindergarten children made the most gains on the PPVT, none of the groups made significant gains. However, when one considers the gains made by these children from the time they entered pre-kindergarten the previous year, to post-testing this year, the growth becomes tremendous. Before their pre-kindergarten experience these children had a mean of 80 on the PPVT. By the end of their kindergarten experience, they averaged 96 which brings them almost to the national norm. The first level Dale Avenue children maintain their pre-kindergarten - kindergarten gain with a mean of 100 at the end of the school year.

When the project aims were discussed in Research Bulletin, Volume I, Number 1, the staff anticipated that the Dale Avenue pupils would make significant gains in pre-kindergarten and maintain those gains or perhaps move ahead in kindergarten.

It is felt that this has been accomplished. The huge gains made in pre-kindergarten were not only maintained but additional gains were made in kindergarten and these gains were maintained through the first level.

The Disadvantaged Control group and the Experimental P.O.R. group entered kindergarten with approximately the same scores as Dale Avenue children had when entering pre-kindergarten. This was expected since it was a first school experience in all cases. However, by the time the Dale Avenue youngsters entered kindergarten, they were scoring significantly better than either the Disadvantaged Controls or the Experimental P.O.R. group. This too, was to be expected. The literature on early childhood education indicates that intervention of structured enrichment programs for disadvantaged pre-school children will raise I.Q. scores significantly.

The project staff had hoped that the Experimental group using the Performance Objective Record in another Paterson school would make significant gains in I.Q. Although they did not compare favorably to the Dale Avenue youngsters, by the end of first grade they were scoring significantly higher than the Disadvantaged Control group. Their average I.Q. was 91 as compared to the Disadvantaged Group's mean score of 76 at post-test time at the end of first grade. This may well indicate that though no difference is manifested at the end of kindergarten the use of performance objectives provides a firm foundation upon which later I.Q. growth can develop.

Several uncontrolled variables may have affected the scores of the kindergarten Disadvantaged Control group and the kindergarten Experimental P.O.R. group. Since the kindergarten teacher in the class with performance objectives had used them the previous year, it is possible that some of the gains made in the initial year were attributable to a Hawthorne effect. Perhaps there was some motivational attrition and a more realistic picture was presented this year. She was also using the Distar Reading Program part of the time rather than using the performance objective curriculum full time as had been anticipated.

The teacher of the kindergarten Disadvantaged group supposedly was not to use the performance objectives. However, she did obtain a copy and one can only conjecture what effect this may have had upon the teaching content of the class. In addition because of the success of the Dale Avenue program

many more of the manipulative materials were introduced into Title I kindergartens throughout the Paterson school district. This made the experience of Title I kindergarteners more like that of Dale Avenue and the Experimental P.O.R. groups.

Although the teacher of the kindergarten Experimental P.O.R. received detailed feedback on the testing, she was unable to attend workshops and monitoring was held to a minimum. Much of the Title III monitoring time was spent with the teacher of the first level Experimental P.O.R. group who was using the performance objectives for the first time. This group did score significantly higher than the Disadvantaged Control group despite not having a full time aide until February, not having any manipulative equipment other than that sent to her by the Title III staff and not having enough readers and workbooks for her entire class. These problems were brought about by delays between the ordering of the services and materials and the delivery of them. This indicates the importance of planning, training and monitoring if performance objectives are to be implemented effectively and efficiently.

The kindergarten Advantaged Control group scored significantly higher than all the other groups at pre and post test time. Since this group comes from affluent homes with parents who are largely professionals and businessmen, such performance was to be expected. This group scored 113 on the average exceeding the national norm of 100. The curriculum at this group's school, although not based on performance objectives, was highly individualized and cannot be considered the traditional curriculum.

The first level Advantaged Control group was divided into two groups. It was decided to augment the Paterson Advantaged group with advantaged youngsters from a suburban school. However, when the suburban school was contacted there was a misunderstanding and only "advanced" advantaged students were presented for testing. These were children who had finished at the top of their kindergarten class. Because the make-up of this group was different from the Paterson Advantaged group, it was felt that it would be better to create two advantaged groups rather than one. The Paterson group was designated "Advantaged #1" and the suburban group was labeled "Advantaged #2".

There was no difference in performance between the Dale Avenue group and the Advantaged #1 group at post-test time. There was a difference between the Dale Avenuers and the Advantaged #2 children.

On the Skills Assessment Test, the Advantaged, Dale Avenue and Experimental P.O.R. kindergarten groups all scored

significantly higher than the Disadvantaged Control group. Because these skills are in the performance objective curriculum, the indications are that the kind of skills that advantaged children bring to their first school experience can be taught in a structured curriculum such as performance objectives. Therefore, at the end of kindergarten even if I.Q. scores are not comparable the gap in skills is closing.

On the kindergarten Identity and Body Parts Checklist, the Advantaged group did not score significantly different from the Dale Avenue students, but they did score significantly higher than the Experimental P.O.R. group. Both Dale Avenue and the Advantaged groups performed significantly better than the Disadvantaged Controls. Although the Experimental P.O.R. group did score higher at post-test time than the Disadvantaged group it was not statistically significant. Since all items on the Identity and Body Parts Checklist can be found in the Performance Objective Record and since the teacher of the Disadvantaged group did have access to this curriculum, it is possible that she taught the children the names of the body parts.

It was especially interesting to note that at pre-test time the Dale Avenue and Advantaged youngsters scored the same on Identity and Body Parts. It seems that the pre-kindergarten experience of the Dale Avenue children closes the environmental gap in knowledge of the self. This gap was apparent in the scores of the Experimental P.O.R. and Disadvantaged groups who scored the same and significantly lower than the Dale Avenue and Advantaged children. Even though upon first entering school, whether it was pre-kindergarten or kindergarten, the Dale Avenue, Experimental P.O.R. and Disadvantaged groups all scored approximately the same on this measure. (See Research Bulletin, Volume I, Number 4).

All of the activities listed in the procedure section probably played an enormous role in improving the I.Q. scores and the academic performance and capabilities of the kindergarten and first level children at the Dale Avenue School. Another critical factor was the exemplary attitude of the teachers. Much of their time, effort and classroom management went into proper grouping and effectively teaching the performance objectives. The specialists also played a tremendous remedial role with the first level children.

Although the Title III personnel were not charged with testing the Dale Avenue pre-kindergarten, the staff pre-tested all the children before they entered the pre-kindergarten program. From this group a random sample of youngsters was selected and was post-tested. Their post-tests were then compared with their pre-test performance. These children exhibited significant gains on the Skill Assessment Test and the

Identity and Body Parts Checklist. However, they did not make significant gains in I.Q. as derived from the Peabody Picture Vocabulary Test. These children did gain an average of 23 points in I.Q. However, there was a high variability in their performance which prohibited reading significance into this gain. It is hoped that the gains manifested, by the group as a whole, will be maintained through kindergarten and that there performance will become more consistent.